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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/085,548 | 02/27/2002 | Takahiro Unno | TI-32337 | 9846 |
| 23494 | 7590 | 04/22/2005 | EXAMINER | |
| TEXAS INSTRUMENTS INCORPORATED P O BOX 655474, M/S 3999 DALLAS, TX 75265 | | | SHORTLEDGE, THOMAS E | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 2654 | |

DATE MAILED: 04/22/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | |
|------------------------------|---------------------------------|-------------------------|--|
| Office Action Summary | Application No. | Applicant(s) | |
| | 10/085,548 | UNNO, TAKAHIRO | |
| | Examiner Thomas E Shortledge | Art Unit 2654 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) Responsive to communication(s) filed on _____.
 2a) This action is **FINAL**. 2b) This action is non-final.
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) Claim(s) 1-6 is/are pending in the application.
 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
 5) Claim(s) _____ is/are allowed.
 6) Claim(s) 1-6 is/are rejected.
 7) Claim(s) _____ is/are objected to.
 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) The specification is objected to by the Examiner.
 10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) Notice of References Cited (PTO-892)
 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
 3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
 Paper No(s)/Mail Date 10/31/02.

4) Interview Summary (PTO-413)
 Paper No(s)/Mail Date. _____.
 5) Notice of Informal Patent Application (PTO-152)
 6) Other: _____.

DETAILED ACTION

Specification

1. The disclosure is objected to because of the following informalities: The specification claims priority to pending application Serial No. 90/705,356, filed 11/03/00; however, this should read Serial No. 09/705,356. Furthermore, the above application has become US PAT 6,826,527, and should be cited as a related not a priority application.

Appropriate correction is required.

Double Patenting

2. Claim 1 is rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 1 of U.S. Patent No. 6,826,527. Although the conflicting claims are not identical, they are not patentably distinct from each other because by dropping the periodicity classification of claim 1 within the application and then subbing in the well known standard muting for error concealment of claim 1 of Patent 6,826,527, the claims would then read the same.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1,2, and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shoham (5,699,485), in view of Husain et al. (Classification and Spectral Extrapolation Based Packet Reconstruction for Low-Delay Speech Coding).

As to claim 1, Shoham teaches:

(a) forming an excitation for an erased interval of encoded code-excited linear prediction signals by a weighted sum of (i) an adaptive codebook contribution and (ii) a fixed codebook contribution (an excitation signal synthesis during frame erasure, with a decoder including both an adaptive codebook portion and a fixed codebook portion (col. 4, lines 49-55), where the output of each is supplied to a summer (col. 4, lines 64-65, and col. 5, lines 40-41), where the summer generates an excitation signal, (col. 5, lines 49-51)), wherein said adaptive codebook contribution derives from an excitation and pitch and first gain of one or more intervals prior to said erased interval, (the erased frame is based on the previous frame, where the adaptive codebook contribution is the pitch and gain is also based on the previous sample, col. 6, lines 33-35, and 44-46), and

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said fixed codebook contribution derives from a second gain of at least one of said prior intervals, (the fixed codebook gain is synthesized based on previous frames, col. 7, liens 23-27);

(b) wherein said weighted sum has sets of weights depending upon a periodicity classification of at least one prior interval of encoded signals, (an indication of periodicity for the erased frame is obtained from the previous frame, (col.6 lines 7-10), where the classification leads to a different summation for each classification, col. 6, line 15, through col. 7, line 34);

(c) filter said excitation (filter the excitation through a synthesis filter, col. 11, lines 27-28).

Shoham does not teach the periodicity classification with at least three classes.

However, Husain et al. teach four classifications, page 848, col. 2.

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to combine the process of forming the excitation for an erased interval of Shoham with the three or more speech classifications of Husain et al. to lower the degradation of a signal with missing packets, as taught by Husain et al. (page 848, col. 1).

As to claim 2, Shoham teaches said filter includes a synthesis with synthesis filter coefficients derived from filter coefficients of said intervals prior in time, (upon the occurrence of a frame erasure, the coefficients stored in memory are supplied to the synthesis filter, col. 7, lines 45-47).

As to claim 5, Shoham teaches:

(a) a fixed codebook vector decoder, (col. 4, lines 49-51);
(b) a fixed codebook gain decoder, (col. 4, lines 56-60);
(c) an adaptive codebook gain decoder, (col. 4, lines 52-53);
(d) an adaptive codebook pitch delay decoder (col. 4, lines 51-53);
(e) an excitation generator coupled to said decoders, (col. 5, line 49); and
(f) a synthesis filter, (col. 5, line 55);
(g) wherein when a received frame is erased, said decoders generate substitute outputs (the fixed codebook and adaptive codebook send signals to summer, col. 5, lines 55-56), said excitation generator generates a substitute excitation, (generate an excitation signal, col. 5, line 55), said synthesis filter generates substitute filter coefficients, (the coefficients stored in memory are supplied to the synthesis filter, col. 7, lines 45-47), and said excitation generator uses a weighted sum of (i) an adaptive codebook contribution and (ii) a fixed codebook contribution with said weighted sum uses sets of weights depending upon a periodicity classification of at least one prior frame, (a summer combines the outputs from each of the codebook decoders, having coefficients, generating an excitation signal, where the generation of the excitation signal is based on the classification of the previous frame, (col. 5, lines 49-54, and col. 6, lines 7-10). The weights applied to the coefficients are representative of the periodicity classification of the previous frame, (col. 6, lines 12-14, 15-17, and 52-55)).

Shoham does not teach the periodicity classification with at least three classes.

However, Husain et al. teach four classifications, page 848, col. 2.

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to combine the process of forming the excitation for an erased interval of Shoham with the three or more speech classifications of Husain et al. to lower the degradation of a signal with missing packets, as taught by Husain et al. (page 848, col. 1).

5. Claims 3, 4, and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shoham (5,699,485), in view of applicants acknowledge prior art.

As to claim 3, Shoham teaches:

(a) forming a reconstruction for an erased interval of encoded code-excited linear prediction signals by use parameters of one or more intervals prior to said erased interval, (an excitation signal synthesis during frame erasure, with a decoder (col. 4, lines 49-55), the erased frame parameters are based on the previous frame, col. 6, lines 33-35).

Shoham does not teach:

(b) preliminarily decoding a second interval subsequent to said erased interval.
(c) combining the results of step (b) with said parameters of step (a) to form a reestimation of parameters for said erased interval; nor
(d) using the step (c) as part of an excitation for said second interval.

However, the prior art disclosed by the applicant teaches interpolation-based concealment method where the past and future frames are decoded and both past and

future frame parameters are used to interpolate missing parameters (specification page 2, lines 11-13 and 22-23)

Therefore it would have been obvious to one of ordinary skill in the art to combine the reconstruction method of Shoham with the interpolation method disclosed in the prior art to create a better approximation of speech signals.

As to claim 4, Shoham teaches smoothing a gain, (applying a synthesis filter, col. 7, line 47-48).

As to claim 6, Shoham teaches:

- (a) a fixed codebook vector decoder, (col. 4, lines 49-51);
- (b) a fixed codebook gain decoder, (col. 4, lines 56-60);
- (c) an adaptive codebook gain decoder, (col. 4, lines 52-53);
- (d) an adaptive codebook pitch delay decoder (col. 4, lines 51-53);
- (e) an excitation generator coupled to said decoders, (col. 5, line 49); and
- (f) a synthesis filter, (col. 5, line 55);
- (g) wherein when a received frame is erased, said decoders generate substitute outputs (the fixed codebook and adaptive codebook send signals to summer, col. 5, lines 55-56), said excitation generator generates a substitute excitation, (generate an excitation signal, col. 5, line 55), said synthesis filter generates substitute filter coefficients, (the coefficients stored in memory are supplied to the synthesis filter, col. 7, lines 45-47).

Shoham does not teach a second frame is received after said erased frame, said excitation generator combines the parameters of said second frame with said substitute outputs to reestimate said substitute outputs to form an excitation for said second frame.

However, the prior art disclosed by the applicant teaches interpolation-based concealment method where the past and future frames are decoded and both past and future frame parameters are used to interpolate missing parameters (specification page 2, lines 11-13 and 22-23)

Therefore it would have been obvious to one of ordinary skill in the art to combine the reconstruction method of Shoham with the interpolation method disclosed in the prior art to create a better approximation of speech signals.

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Kroon et al. (5,732,389), Minde (6,393,392), and Swaminathan (5,734,789).

Kroon et al. teach a CELP speech decoder with an adaptive codebook and a fixed codebook, where an excitation signal is generated from their outputs.

Minde teaches a decoder involving an adaptive codebook and a fixed codebook, where their outputs create an excitation signal.

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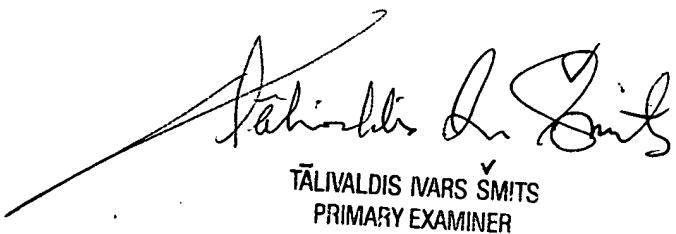
Swaminthan teaches a CELP decoder able to operate in three modes.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thomas E Shortledge whose telephone number is (571)272-7612. The examiner can normally be reached on M-F 8:00 - 4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Talivaldis Smits can be reached on (571)272-7628. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

TS
04/08/2005



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PRIMARY EXAMINER